

**REBUTTAL TESTIMONY OF**  
**JOSEPH M. LYNCH**  
**ON BEHALF OF**  
**SOUTH CAROLINA ELECTRIC & GAS COMPANY**  
**DOCKET NO. 2019-2-E**

1   **Q.     PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2   A.           My name is Joseph M. Lynch and my business address is 220 Operation  
3               Way, Cayce, South Carolina.

4  
5   **Q.     ARE YOU THE SAME JOSEPH LYNCH THAT OFFERED DIRECT**  
6               **TESTIMONY IN THIS DOCKET?**

7   A.           Yes, I am.

8  
9   **Q.     WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?**

10 A.           The purpose of my rebuttal testimony is to discuss the response of South  
11               Carolina Electric & Gas Company (“SCE&G” or the “Company”) to certain issues  
12               raised in 1) the direct testimony of Mr. Brian Horii filed on behalf of the South  
13               Carolina Office of Regulatory Staff (“ORS”), 2) the direct testimony of Ms. Devi  
14               Glick filed on behalf of the South Carolina Coastal Conservation League and the  
15               Southern Alliance for Clean Energy (collectively, “CCL/SACE”) and 3) the direct

1 testimony of Mr. Tyler Norris filed on behalf of the South Carolina Solar Business  
2 Alliance (“SCSBA”).  
3

4 **REBUTTAL TO TESTIMONY OF MR. BRIAN HORII**

5 **Q. MR. HORII BEGINS HIS DIRECT TESTIMONY ON PAGE 4, LINE 5 BY**  
6 **BRIEFLY SUMMARIZING THE REQUIREMENTS OF PURPA. DID MR.**  
7 **HORII OMIT ANY IMPORTANT ISSUES FROM HIS SUMMARY?**

8 A. Yes. In his summary of PURPA, Mr. Horii failed to recognize the regulation  
9 that is most relevant to these proceedings. Specifically, 18 C.F.R. § 292.304(a)(2)  
10 provides that “[n]othing ... requires any electric utility to pay more than the  
11 avoided costs for purchases.” Mr. Horii’s testimony regarding the “capacity value  
12 of solar” therefore is largely irrelevant because it does not identify any effect on  
13 SCE&G’s resource plan and does not explain how the Company avoids any  
14 capacity related costs.  
15

16 **Q. ON PAGE 9, LINE 14, MR. HORII CLAIMS THAT YOU DID NOT**  
17 **IDENTIFY A FLAW IN THE PROBABILISTIC LOSS OF LOAD**  
18 **EXPECTATION (“LOLE”) METHOD. DO YOU AGREE?**

19 A. No. On page 18 of my direct testimony, I specifically recognized that “[t]he  
20 LOLE methodology addresses average risk for the entire year and an unacceptable  
21 risk level on the peak day can be hidden by the summary result for the year.” Stated  
22 differently, the LOLE method looks at the peak demand on every day of the year

1 and fails to focus on the significant risk associated with the one-hour seasonal peak  
2 demand. The example I provide shows this point clearly. My example shows that  
3 the LOLE methodology implies that 195 MW of capacity increases reliability  
4 enough to counterbalance the increased risk associated with a spike in peak demand  
5 of 500 MW which is simply an unreasonable result.  
6

7 **Q. ON PAGE 9 LINE 26 MR. HORII EXPLAINS REGARDING THE 500 MW**  
8 **SPIKE THAT SCE&G "...WOULD ONLY HAVE A PROBLEM UNDER**  
9 **THE JOINT CONDITIONS" WHICH HE LISTS. DOES THAT**  
10 **ELIMINATE THE ISSUE OF A FLAW?**

11 A. No, it does not. In fact, it supports my contention that the LOLE method is  
12 not a sufficient analysis to address the risk of a spike in demand. The conditions  
13 Mr. Horii discusses include spikes in other hours of the year, loss of generating  
14 capacity and importing power, all of which represent considerations beyond the  
15 calculation of the LOLE index.  
16

17 **Q. ON PAGE 9, LINE 23, MR. HORII STATES "IT WOULD CLEARLY BE**  
18 **OVERBUILDING TO ADD 500 MW OF CAPACITY FOR THE CHANCE**  
19 **THAT YOU MIGHT HAVE A 500 MW SPIKE IN LOAD." DO YOU**  
20 **AGREE?**

21 A. I agree that building a 500 MW generating plant to serve a 500 MW spike in  
22 demand is not appropriate. However, deploying a demand response program to

1 address the full 500 MW spike would be appropriate. In its reserve margin study  
2 attached as Exhibit No. \_\_ (JML-3) to my direct testimony, SCE&G identifies the  
3 demand risk related to a spike in winter peak demand of 556 MW. In deriving the  
4 21% winter reserve margin, SCE&G includes the need for 556 MW of reserves to  
5 help serve customers when the spike occurs.  
6

7 **Q. ON PAGE 8, LINE 12, MR. HORII DESCRIBES SCE&G'S APPROACH TO**  
8 **PLANNING AS DETERMINISTIC. IS THIS DESCRIPTION CORRECT?**

9 A. No, it is not. In the Reserve Margin Study, Table 3 shows the probability  
10 distribution of supply side risk. SCE&G chooses the 70<sup>th</sup> percentile from this  
11 distribution as a component of reserves. This leaves a 30% probability of a supply  
12 shortfall in a very cold winter. In sum, SCE&G's approach is based on recognized  
13 probabilistic methods and is not deterministic.  
14

15 **Q. WHY DOESN'T SCE&G MODERATE THE 556 MW DEMAND SIDE**  
16 **RISK COMPONENT OF RESERVES BY TAKING INTO**  
17 **CONSIDERATION THE LOW PROBABILITY OF A VERY COLD**  
18 **WINTER OCCURRING?**

19 A. SCE&G considers the demand side risk differently than the supply side risk.  
20 In its resource planning SCE&G must consider the risk of a very cold winter  
21 occurring not only next year but the year after and the year after that and so on. For

1 SCE&G, it is not a question of “if” the system will experience a very cold winter  
2 but a question of “when.”  
3

4 **Q. CAN YOU ILLUSTRATE THIS POINT MORE CLEARLY?**

5 A. Yes, I can. SCE&G’s probability distribution of demand side risk is shown  
6 in Table 2 of the Reserve Margin Study. This table shows the maximum demand  
7 risk of a 556 MW spike and a 90<sup>th</sup> percentile of 527 MW. This means that there is  
8 a 10% probability of a winter spike in demand between 526 and 556 MW. Using  
9 probability theory, it is a simple matter to show that this 10% probability implies a  
10 79.4% probability of at least one very cold winter occurring during the 15-year IRP  
11 planning horizon. With reliability of service being the goal, SCE&G believes the  
12 79.4% probability is more relevant to resource planning than the 10%.  
13

14 **Q. ON PAGE 10, LINE 15, MR. HORII SUGGESTS THAT AN HOURLY**  
15 **LOLE ANALYSIS WOULD BE MORE USEFUL THAN THE DAILY**  
16 **ANALYSIS PROVIDED. DO YOU AGREE?**

17 A. No, I do not. In fact, the hourly LOLE is more flawed than the daily LOLE  
18 because, instead of the risk of meeting 365 daily peaks, it uses all 8,760 hours of  
19 load without due consideration for the most important hours, i.e., the seasonal peak  
20 demands.  
21

**Q. DID YOU CALCULATE AN HOURLY LOLE? IF SO, WHAT DID IT SHOW?**

A. Yes. I replicated the work shown in Exhibit No. \_\_ (JML-4) of my direct testimony. The following table summarizes the results. When using hourly data, the LOLE guidance of 1 day in 10 years becomes 24 hours in 10 years, i.e., we want LOLE to equal 2.4 hours per year.

Reserve Margin Distributions for Hourly LOLE=2.4 for Years 2004-2018			
	Minimum	Median	Maximum
Peak Method	8.8%	10.6%	12.7%
Energy Method	7.1%	10.5%	13.6%

For comparison the following table is a copy of the daily peak LOLE analysis summarized in my direct testimony.

Reserve Margin Distributions for Daily Peak LOLE=0.1 for Years 2004-2018			
	Minimum	Median	Maximum
Peak Method	16.6%	18.2%	20.5%
Energy Method	14.8%	17.2%	21.3%

**Q. WHY DOES THE LOLE BASED ON DAILY PEAK DATA INDICATE THE NEED FOR A HIGHER RESERVE MARGIN THAN THAT USING THE HOURLY LOLE ANALYSIS?**

A. The Company's goal is to provide reliable service to every customer everyday regardless of how cold or hot the weather may be. Most of the risk related to unserved load occurs in the peak and near peak demands. As you throw more loads into the LOLE analysis, for example, going from 365 daily peak loads to

8,760 hourly loads, the risk gets diluted, that is, the peak hour risk gets averaged out over many other loads where there is little risk. The LOLE can also be calculated on system loads integrated over 15 minutes. SCE&G works with this 15-minute data all the time. When using 15-minute data, instead of the day being split into 24 intervals, it is split into 96 intervals and for a 1 day in 10-year equivalence, we want LOLE to equal 9.6. Additionally, instead of daily peaks, we can look at weekly peaks in which case the LOLE for 1 day in 10 years should equal 0.0143, i.e., 1 over 7 divided by 10. The following table shows the results based on SCE&G's 2018 load data.

<b>LOLE Method</b>	<b>Number of Intervals</b>	<b>Reserve Margin</b>	<b>LOLE Value</b>	<b>Description</b>
<b>Weekly</b>	<b>52</b>	<b>23.6%</b>	<b>0.0143</b>	<b>1 day=0.143 weeks in 10 years</b>
<b>Daily</b>	<b>365</b>	<b>19.3%</b>	<b>0.1</b>	<b>1 day in 10 years</b>
<b>60-minute</b>	<b>8,760</b>	<b>11.4%</b>	<b>2.4</b>	<b>1 day=24 hours in 10 years</b>
<b>15-minute</b>	<b>35,040</b>	<b>11.1%</b>	<b>9.6</b>	<b>1 day=96 intervals in 10 years</b>

The results shown in the table demonstrate that the more intervals analyzed with the LOLE methodology, the more the risk becomes diluted and the smaller the indicated need for capacity, an erroneous indication.

1 **Q. DID YOU RE-CALCULATE YOUR EXAMPLE INVOLVING A 500 MW**  
2 **SPIKE USING THE LOLE HOURLY ANALYSIS? IF SO, WHAT DID IT**  
3 **SHOW?**

4 A. Yes, I did the calculations. Using the hourly LOLE analysis, my example  
5 shows that the LOLE methodology implies that adding only 57 MW of capacity  
6 increases reliability enough to counterbalance the increased risk associated with a  
7 spike in peak demand of 500 MW, which again is simply an unreasonable result  
8 and, in fact, more unreasonable than the LOLE results based on daily data.

9  
10 **Q. ON PAGE 8, LINE 8, MR. HORII SUGGESTS IT IS A FLAW NOT TO**  
11 **RECOGNIZE SOLAR CAPACITY VALUE “DURING THE MYRIAD OF**  
12 **OTHER PEAK HOURS” WITH RELIABILITY RISK. DO YOU AGREE?**

13 A. No, I do not, and I think his reference to the value of solar only confuses the  
14 primary issue which is avoided costs. Almost every kWh that a solar farm puts on  
15 the grid has value and SCE&G’s PR-2 rate compensates for that value. But the  
16 relevant question is what costs are avoided and, specific to this issue, what  
17 capacity-related costs are avoided. The intent of PURPA is to hold electric  
18 customers harmless through a QF purchase. In other words, customers should be  
19 financially indifferent between receiving a kWh from a solar facility or from  
20 SCE&G’s resources. Since incremental amounts of solar do not enable SCE&G to  
21 avoid capacity costs, the avoided capacity costs are zero.



1 **Q. ON PAGE 7, LINE 19, MR. HORII POINTS OUT THAT “SOLAR ONLY**  
2 **HAS THE ABILITY TO REDUCE THE WINTER PEAK IN ONE OUT OF**  
3 **THE PAST FIVE WINTERS.” DOES THAT IMPLY SOLAR HAS SOME**  
4 **CAPACITY VALUE IN WINTER?**

5 A. No, it does not. The one winter peak that occurred in the past five winters  
6 was on January 5, 2018. On page 7 of my direct testimony, I explained that solar  
7 capacity added to the system above 500 MW had no effect on the net peak demand,  
8 and it should be noted that SCE&G has already contracted for more than 1,000  
9 MW of solar.  
10

11 **Q. ON PAGES 10 THROUGH 14, MR. HORII DISCUSSES A ‘CAPACITY**  
12 **VALUE FACTOR” DERIVED FROM THE DUKE ENERGY PROGRESS**  
13 **(“DEP”) AND DUKE ENERGY CAROLINA (“DEC”) SYSTEMS? IS THIS**  
14 **COMPARISON RELEVANT TO THIS DOCKET?**

15 A. No, it is not relevant. The relevant matter is SCE&G’s avoided capacity costs  
16 which should be derived from a change in SCE&G’s resource plan caused by the  
17 purchase from a QF. Capacity value factors and how solar generation may affect  
18 the DEP and DEC systems are not relevant to this determination.  
19  
20

1 **Q. ON PAGES 14 THROUGH 17, MR. HORII DERIVES AND**  
2 **RECOMMENDS AN AVOIDED CAPACITY VALUE OF \$0.0029 PER**  
3 **KWH BASED ON THE COST OF A 93 MW CT. DO YOU BELIEVE THIS**  
4 **CALCULATION IS RELEVANT?**

5 A. No. Since it is not based on any costs that SCE&G will avoid, it is not  
6 relevant.  
7

8 **Q. ON PAGE 14, LINE 1, MR. HORII ARGUES THAT IT IS APPROPRIATE**  
9 **TO BASE SCE&G'S AVOIDED CAPACITY COSTS ON OTHER UTILITY**  
10 **SYSTEMS? DO YOU AGREE?**

11 A. No, I do not. There is nothing in the PURPA law or the FERC regulations  
12 that suggests setting an avoided cost for one utility based on the avoided cost of  
13 another utility is appropriate. Avoided capacity costs should be based on changes  
14 in the need for capacity on SCE&G's system. Otherwise, SCE&G's customers will  
15 pay a higher price for power than intended by PURPA.  
16

17 **Q. ON PAGE 17, LINE 9, MR. HORII OPINES THAT SCE&G SHOULD**  
18 **PUBLISH A NON-SOLAR PR-2 RATE? DO YOU AGREE?**

19 A. No, I do not. PURPA was passed in 1978 and SCE&G has been able to  
20 satisfactorily negotiate avoided costs without a published tariff until the recent  
21 surge in generation from solar QFs. There are no non-solar QFs requesting avoided  
22 cost contracts at present. Therefore, there is no need for a non-solar published tariff.

1 The only reason SCE&G has a published solar tariff is to more efficiently and  
2 effectively serve the volume of solar QFs. Additionally, the avoided cost of a QF  
3 is highly dependent on the type of QF in question and how its output profile  
4 interacts with SCE&G's load profile as well as the output profiles of all the solar  
5 QFs already under contract.

6  
7 **Q. ON PAGE 17, LINE 19, MR. HORII ARGUES THAT SCE&G SHOULD**  
8 **ADD A CAPACITY VALUE TO PR-1 FOR NON-SOLAR RESOURCES?**  
9 **DO YOU AGREE?**

10 A No, I do not for reasons identical to those arguing against a non-solar PR-2  
11 tariff.

12  
13 **Q. ON PAGE 30, LINE 3, MR. HORII RECOMMENDS THAT TABLE 12 IN**  
14 **MY AMENDED DIRECT TESTIMONY, WHICH REFLECTS THE NEM**  
15 **VALUES, SHOULD BE CHANGED TO INCLUDE HIS VARIABLE**  
16 **INTEGRATION COST AND HIS CALCULATED AVOIDED SOLAR**  
17 **CAPACITY VALUES? DO YOU AGREE?**

18 A No, I do not. The avoided capacity costs for solar is zero on the SCE&G  
19 system. I also support the variable integration cost estimated by Mr. Tanner. I  
20 therefore believe it is appropriate for the NEM calculation to reflect SCE&G's  
21 proposed values for these components.

1   **Q.     ON PAGE 8, LINE 13, MR. HORII CLAIMS “A FOCUS ON A SINGLE**  
2   **PEAK HOUR IS AN OUTDATED APPROACH.” DO YOU AGREE?**

3   A.       No, I do not. I believe all electric utilities that have a responsibility to reliably  
4   serve customers worry about serving load during that single peak hour and it makes  
5   sense to do so. In resource planning, if an electric utility has sufficient capacity to  
6   reliably serve the single peak hour with its attendant demand and supply risks, then  
7   it logically follows that the utility will have enough capacity to serve a lesser load  
8   on the system. In fact, serving these lesser loads is more of an operations issue in  
9   that the pertinent question is how best to deploy the resources whose amount has  
10  already been established by analysis of the single peak demand.

11  
12       **REBUTTAL TO THE TESTIMONY OF MS. DEVI GLICK**

13   **Q.     WITH RESPECT TO MS. GLICK’S TESTIMONY, PLEASE EXPLAIN**  
14   **HOW YOU ORGANIZE YOUR RESPONSES.**

15   A.       In the same manner I responded to Mr. Horii’s testimony, my rebuttal  
16   testimony sequentially addresses the issues raised by Ms. Glick as they appear in  
17   her direct testimony.

1 **Q. ON PAGE 18, LINE 13, MS. GLICK ARGUES THAT SCE&G SHOULD**  
2 **USE THE PEAKER METHOD TO ESTIMATE AN AVOIDED CAPACITY**  
3 **COST FOR SOLAR? DO YOU AGREE?**

4 A. No, I do not. Additional solar on SCE&G's system will not change its  
5 resource plan because solar does not affect the winter peak demand. Making  
6 SCE&G's customers pay avoided capacity costs when they don't exist is certainly  
7 inappropriate and contrary to the intention of PURPA.  
8

9 **Q. ON PAGE 19, LINE 6, MS. GLICK SAYS SCE&G HAS AN OBLIGATION**  
10 **TO CONTINUE FILLING IN THE NEM VALUE OF DER TABLE? DO**  
11 **YOU AGREE?**

12 A. Yes, I do, and SCE&G has provided a value for each NEM component. Some  
13 of those values just happen to be zero, as has been the case in previous years.  
14

15 **Q. ON PAGE 19, LINE 20, MS. GLICK CLAIMS THAT "THE COMPANY**  
16 **FAILED TO PROPERLY CALCULATE THE AVOIDED GENERATION**  
17 **CAPACITY PORTION OF THE NEM DER? DO YOU AGREE?**

18 A. No, I do not. The avoided capacity cost of NEM solar is zero which is  
19 reflected in the table.  
20  
21

1 **Q. ON PAGE 20 LINES 4 THROUGH 10 MS. GLICK ARGUES THAT SCE&G**  
2 **SHOULD INCLUDE AN AVOIDED TRANSMISSION AND**  
3 **DISTRIBUTION (“T&D”) CAPACITY COST, USE MARGINAL LINE**  
4 **LOSSES NOT AVERAGE AND RE-EVALUATE ITS FUEL HEDGE**  
5 **AVOIDED COST? HOW DO YOU RESPOND?**

6 A. SCE&G’s avoided capacity costs related to T&D are zero, which is reflected  
7 in the NEM table. The line losses are marginal line losses and SCE&G does not  
8 hedge fuel, so the avoided cost of fuel hedging is zero as reflected in the NEM  
9 table.

10  
11 **REBUTTAL TO TESTIMONY OF MR. NORRIS**

12 **Q. WITH RESPECT TO MR. NORRIS’ TESTIMONY, PLEASE EXPLAIN**  
13 **HOW YOU ORGANIZE YOUR RESPONSES.**

14 A. In the same manner I responded to Mr. Horii’s and Ms. Glick’s testimony,  
15 my rebuttal testimony sequentially addresses the issues raised by Mr. Norris as they  
16 appear in his direct testimony.

17  
18 **Q. ON PAGE 12, LINE 20, MR. NORRIS CLAIMS THAT “SCE&G’S NEW**  
19 **RATE IS WHOLLY UNFINANCEABLE FOR ANY SOLAR DEVELOPER**  
20 **IN THE REGION.” DO YOU AGREE?**

21 A. I cannot agree nor disagree with this claim since I do not know what profit  
22 return solar developers require nor how they finance their projects. However,

1 SCE&G's avoided cost rates are based on SCE&G's avoided costs and do not  
2 consider whether or not a QF project can be financed.

3  
4 **Q. ON PAGE 14, LINE 3, MR. NORRIS CLAIMS THAT "SCE&G DOES NOT**  
5 **EVEN ATTEMPT TO CALCULATE AVOIDED CAPACITY RATES" AND**  
6 **"SIMPLY CLAIMS" THAT SOLAR HAS NO CAPACITY VALUE. DO**  
7 **YOU AGREE?**

8 A. I do not. Exhibit No. \_\_ (JML-1) is a study titled "The Capacity Benefit of  
9 Solar QFs 2018 Study." This study explains that solar does not affect system load  
10 at the time of a winter peak and therefore cannot alter the resource plan which, if it  
11 did, could have non-zero avoided capacity costs.

12  
13 **Q. ON PAGE 18, LINE 10, MR. NORRIS SUGGESTS THAT "CAPITAL BIAS**  
14 **MIGHT LEAD A UTILITY LIKE SCE&G ... TO PREFER MEETING ITS**  
15 **WINTER PEAKING NEEDS BY CONSTRUCTING A NEW NATURAL**  
16 **GAS FACILITY..." DO YOU AGREE?**

17 A. No, I do not. SCE&G's winter reserve margin target is 21% with 7% of that  
18 designated as peaking and 14% as base. SCE&G is currently studying how to meet  
19 the peaking need through demand response programs targeted for winter.

20  
21 **Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?**

22 A. Yes.